Extraction of DNA

Experiment 1: Extraction of DNA from onion

Materials:

Onion1/2, Ice cold 60% ethanol, Acetorein (Acetocarmine),
Blender, Beaker, Glass bar, Tea strainer, Syringe,
Liquid for extraction of DNA (NaCl 12g, Liquid detergent 20ml, Water 180ml)

Procedure:

(1) Blend internal leaves of onion in the mixer (blender) for 30seconds.

(2) Add 20ml of the liquid for extraction of DNA and stir it gently. Then leave it for 10minutes.

(3)Put a tea strainer (sieve) on a small beaker and strain the liquid.

(4) Pour ice cold 60%ethanol (double the amount of the liquid) gently along the side of the beaker.

(5) After a few seconds, white fibers (look like cotton) appear in the ethanol layer. (It is DNA.)

(6) Stain the white fibers by acetorcein (acetocarmine).

Note:

(1)DNA is easily to be cut by physical instinct because of a long chain structure.
Therefore, need to stir gently.

(2)Operate quickly! Because there is a DNA resolve enzyme in cells.

(3) Since there is a surface-active agent in liquid detergent, the detergent destroys cell membrane and protein.

Question:

(1) What is DNA?

DNA stores genetic information which determines as to what type of organism and what characters would be produced in any living organism.

(2) Why is it possible to extract DNA by ice cold alcohol?

Because relative density of DNA is lightly than other components and solubility of ice cold alcohol is low. This is why DNA appears in the alcohol layer.

Experiment 2: Extraction of DNA From chicken liver

Materials (for 6groups) :

Chicken liver 50g, Ice cold pure ethanol 500ml,
Acetorein (Acetocarmine),
Blender, Beaker (1000ml, 200ml), Glass bar,
Cotton gauze, Ice
2mol/l NaCl solution (NaCl 60g, Water 500ml)
Detergent solution (Liquid detergent 1push, Water 200ml)

Procedure:

(1) Blend frozen chicken liver in the blender for 2 minutes.
(2) Divide 30ml liver juice for each group.
(3) Add 30ml of 2mol/l NaCl solution and stir it gently.
(4) Boiling (3)liquid for 5minutes.
(5) Filtrating (4)liquid by cotton gauze immediately and cooling by ice.
(6) Pour ice cold pure ethanol (double the amount of (5)liquid) gently along the glass bar.
(7) After a few seconds, white fibers (look like cotton) appear in the ethanol layer.(It is DNA.)
(8) Stain the white fibers by acetorcein (acetocarmine).

(1)

(4)

(5)

(6)

(7)